Lesson 8.3- Parallel and Perpendicular lines

Investigation 1

a) What do you notice about these two lines?

Parallel

Parallel Symbol:

b) What is the same?

Slopes both

c) What is different?

y-intercept

Investigation 2

a) What do you notice about these two lines?

Perpendicular

Perpendicular symbol:

Perpendicular lines are defined as two lines that meet or intersect each other at right angles.

b) Are the slopes the same?

No and aren’t the same

c) Do the slopes have anything in common?

Opposite reciprocals

An opposite reciprocal is the number that must be multiplied by another number to get Put another way, the opposite reciprocal of a number is the negative inverse of that number.

Parallel lines have the same slopes.

Perpendicular lines have opposite reciprocal slopes.

Here are examples of opposite reciprocals:

Identify each pair of lines as parallel, perpendicular, neither.

1)

Perpendicular

2)

Neither

3)

Parallel

Slope intercept form:

Standard Form:

Point-Slope Form:

4) Using the given linear relationship:

a) Write an equation in slope intercept form for a line parallel and through the point

b) Write an equation in slope intercept form for a line parallel and through the origin.

c) Write an equation in point slope form for a line parallel and through the point

d) Write and equation in slope intercept form for a line perpendicular with the same y-intercept

e) Write an equation in point slope form for a line perpendicular through point

5) Line M goes through the points

a) Write an equation in slope intercept form for a line parallel to and through

b) Write an equation in slope intercept form for a line perpendicular to and through the origin.

6) For each linear relationship, state the slope of a line parallel to it and perpendicular to the given line.

Parallel:

Perpendicular:

Parallel:

Perpendicular:

Parallel:

Perpendicular:

Parallel:

Perpendicular: Undefined

Parallel:

Perpendicular:

Parallel:

Perpendicular:

7. Given the Linear relationship

a) Write an equation in slope intercept form for a line parallel and through the point

b) Write an equation in slope intercept form for a line parallel and through the origin.

c) Write an equation in point slope form for a line perpendicular through the point

d) Write an equation in slope intercept form for a line perpendicular through the point

8) Given the linear relationship

a) Write an equation in slope intercept form perpendicular to the line

Any y-intercept

b) Write an equation in slope intercept form perpendicular to the line

Any y-intercept